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Title of the Device : Exhaust gas filter

Application : S57-45873 Mar.31,1982

Creator of Device : Takeshi Mitsutomo, Noriaki Kinoshita, Eiji Nakajima,

Applicant : Tsuchiya Seisakusho Ltd.

Specification

1. Title of the Device : Exhaust gas filter

2. Claim of Utility Model

The exhaust gas filter has the cylindrical filtrating body which consists of many filtrating chambers. The cylindrical filtrating body is made of the thin & porous metal bodies which are rolled up. One side of the layered open ends and the other side of the layered open ends are alternately pressed, then sealed.

3. Detailed Explanation of the Device

This device is related to the exhaust gas filter which separates fine particles from the exhaust gas of internal combustion engines. Fine particles which are discharged from internal combustion engines primarily consist of carbon, and it is said that the diameter of a carbon particle is 1 micron or less.

The traditional exhaust filter shown in Fig.1 has the heat-resistant cylindrical filtrating media, for example, steel wire etc. which is filled in the case 3 with the inlet 1 and the outlet 2 .

The exhaust filter with the structure mentioned above has defects as follows.

That is, fine particles in the exhaust gas are collected by the front inlet part 5 of the cylindrical filtrating body 4 , and the inner part of the cylindrical filtrating body is not used effectively. Because the diameter of fine particles is 1 micron or less, such phenomena are typical in these kinds of exhaust filters

Then, making the filtrating chambers in the back of the filtrating body is one of the ideas to increase the filtrating area. But, if

organic chemicals must be used for making the filtrating chambers, it is difficult to get organic chemicals that have good heat resistance.

So, in consideration of that mentioned above, this device offers a filter with a heat-resistant filtrating body and a large filtrating area.

The explanation by the working example in Fig.2 and Fig.3, is as follows.

The exhaust gas filter related to the device has the cylindrical filtrating body 10 which is formed by rolling up the thin & porous metal bodies 11 around the metal center core 12 . One side 13 of the layered open ends 14 and the other side 15 of the layered open ends 16 are alternately sealed. Sealing is done by pressing both open ends 14, 16 mechanically.

The thin & porous metal body 11 is made as follows.

For example, the metal like nickel etc. is deposited on the body which has the three dimensional meshed structure like the thin polyurethane foam.

The metal mentioned above is sintered when the polyurethane foam is burnt out by heating it at high temperature. The cylindrical filtrating body 10 has many filtrating chambers which are opened at one side of the ends and closed at the other side of the ends.

The cylindrical filtrating body 10 is filled and set in the case 20 with the inlet 18 and the outlet 19 . In Fig.3 ,the exhaust gas comes in from the inlet 18 , goes to the inlet side of the filtrating body 10 and then flows into the filtrating chambers 17 . The exhaust gas passes through the filtrating chambers 17 and goes out to the outlet 19 .

While the exhaust gas passes through the filtrating chambers 17 , fine particles in the exhaust gas are filtrated. The filtrating chambers 17 are extended to the back of the cylindrical filtrating body 10 to increase the filtrating area.

The cylindrical filtrating body 10 is made from metal only and has good heat resisting properties.

As mentioned above, the exhaust gas filter related to the device has the cylindrical filtrating body which is made of the thin & porous metal bodies.

The thin & porous metal bodies are rolled up, and one side of the layered open ends and the other side of the layered open ends are

alternately pressed and then sealed.

The cylindrical filtrating body has the filtrating chambers which are made from metal only and provide a large filtrating area without making the heat resistance worse.

Consequently, we can get the filter which can filtrate fine particles with relatively long life..

4. Brief Description of Drawing

Fig.1 is the sectional view of the traditional filter.

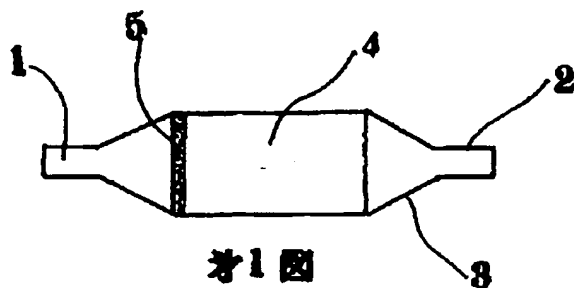
Fig.2 is the drawing of the cylindrical filtrating body which is used for the filter related to the device.

Fig.3 is the sectional view of the exhaust gas filter related to the device.

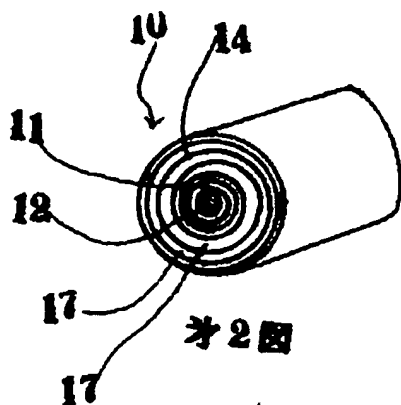
10 : cylindrical filtrating body

17 : filtrating chamber

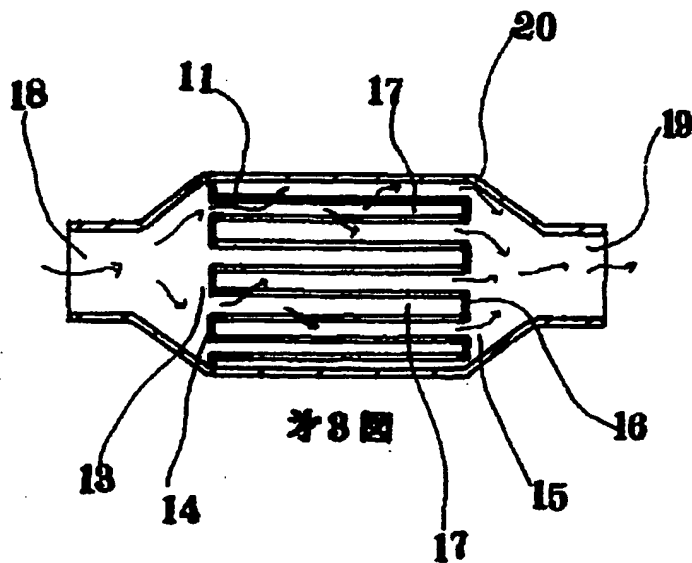
20 : case



才1圖



才2圖



才3圖

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